**Claims:**

sub B' **1.** A communication network that includes nodes and link bundles that interconnect said nodes, where said link bundles are carried over physical spans of transmission facilities, the improvement in each of said nodes comprising:

a processing module that determines, with respect to each link bundle to which the node of said processing module is connected, whether said node of said processing module is

a command node, where a command node is a node that triggers rerouting in response to a failure indication associated with said link bundle, or

is a backup command node, where a backup command node is a node that triggers rerouting in response to a failure indication associated with said link bundle when said command node is unresponsive.

**2.** The network of claim **1** where each of said nodes further comprises a communication module that receives status information from nodes connected to said each of said nodes and rebroadcasts said status information to nodes connected to said each node.

**3.** The network of claim **1** where each of said nodes further comprises a communication module that is adapted to receive status information from all nodes connected to said each of said nodes, and rebroadcasts said status information to said all nodes, except to the node connected to said each of said nodes from which said status information is received.

**4.** The network of claim 1 where each of said nodes further comprises a communication module that receives status information from nodes connected to said each of said nodes and rebroadcasts said status information to a computable set of nodes connected to said each node.

Sub Q2

**5.** A communication network that includes nodes $N_p$, $p$=1, 2, 3..., and link bundles $L_{pq}$, q=1, 2, 3..., that interconnect nodes $p$ and $q$, where said link bundles are carried over physical spans of transmission facilities, the improvement comprising:

a neighborhood $M_p$ associated with each node $N_p$, where neighborhood $M_p$ is different from neighborhood $M_q$ for all $p \neq q$; and

node $N_p$ comprises a processing module that receives information about spare capacity in neighborhood $M_p$ and maintains a set of re-route plans or pointers to such plans.

**6.** The network of claim **5** wherein said re-route plans of node $N_p$ involve re-routing of paths between a node $N_j$ in neighborhood $M_p$ and a node $N_k$ in neighborhood $M_p$.

**7.** The network of claim **5** wherein said processing module in node $N_p$ initiates a re-route plans creation process whenever it receives information about a change in resource availability in neighborhood $M_p$ that leads said processing module to conclude the a recreation of re-route plans is in order.

**8.** The network of claim **7** wherein said information indicates an increase in spare capacity, or a decrease in spare capacity.

**9.** The network of claim **7** wherein said information indicates a decrease in spare capacity because of a failure in an element within its neighborhood.

**10.** The network of claim **5** wherein said processing module, upon receiving information of a failure condition of a type for which node $N_p$ is a command node for purposes of re-routing, triggers execution of a pre-planned re-routing plan to bypass said failure condition.

**11.** The network of claim **5** wherein said processing module, upon receiving information of a failure condition of a type for which node $N_p$ is a backup command node for purposes of re-routing, triggers execution of a pre-planned re-routing plan to bypass said failure condition when, in response to a query of a node $N_q$ that is a command node for said failure condition, node $N_p$ determines that node $N_q$ will not trigger said execution of said pre-planned re-routing plan.

**12.** The network of claim **11** wherein said triggering comprises transmitting a re-route plan to each node in neighborhood $M_p$ that is involved in a re-routing to bypass said failure condition.

**13.** The network of claim **11** wherein said triggering comprises transmitting a pointer for triggering execution of a re-route plan.

**14.** The network of claim **11** wherein said triggering comprises broadcasting a pointer for triggering execution of a re-route plan.

**15.** The network of claim **5** wherein said node $N_p$ transmits each of the re-route plans that is developed as part of the re-route plans creation process to nodes in its neighborhood that are involved in said each of said re-route plans.

**16.** The network of claim **15** wherein a plan ID pointer is included in each of the transmitted re-route plans.

Sub a3 **17.** Apparatus including a plurality of ports, a cross-connect element coupled to said ports, and a control elements for effecting a path through said cross-connect element from a first port of said plurality of ports to a second port of said plurality of ports, the improvement comprising:

a processing module that determines, with respect to each of said ports, whether said apparatus is a command node that triggers rerouting in response to a failure indication associated with said port, or is a backup command node that triggers rerouting in response to a failure indication associated with said port only when another apparatus is unresponsive.

**18.** The apparatus of claim **17** wherein said processing module is also designed to receive status information that includes spare capacity information from other apparatus that is connected to said apparatus via said ports.

**19.** The apparatus of claim **17** wherein said processing module is designed to receive status change information from other apparatus that is connected to said apparatus via said ports, and broadcasts the received status change information to said ports.

**20.** The apparatus of claim **19** wherein said processing module said status change information received via a first port to a computable set of said ports of said apparatus.

**21.** The apparatus of claim **19** wherein said processing module broadcasts said status change information received via a first port to all other of said ports of said apparatus, other than to said first port.

**22.** The apparatus of claim **19** wherein said processing module receives status change information with a rebroadcast index, and rebroadcasts said status change information following an incrementing of said rebroadcast index.

**23.** The apparatus of claim **19** wherein said communication module receives status change information with a rebroadcast index, and rebroadcasts

said status change information, with said rebroadcast index incremented, but only if said rebroadcast index is less than a preselected value.

**24.** The apparatus of claim **19** where said communication module also acts in response to said status change information.

**25.** The apparatus of claim **24** where said communication module acts in response to said status change information by initiating a re-routing pre-planning process when said communication module deems it advisable to account for said status change information.

**26.** The apparatus of claim **25** where said processing module generates a set of re-routing plans for those failures for which said apparatus is a command node.

**27.** The apparatus of claim **26** wherein said processing module transmits each of the re-routing plans that it generates to specifically addressed other apparatus.

**28.** The apparatus of claim **26** wherein said processing module transmits the set of re-routing plans that it generates for a given failure to at least an apparatus that is designated at the backup apparatus for said given failure.

**29.** A method carried out at a network node comprising the steps of:

receiving a message indicative of a change in resources at another node, said message including information regarding number of node hops through which said message arrived at said network node;

when said information denotes that said number of hops is less that a preselected number, broadcasting said message to other nodes.

**30.** The method of claim **29** further comprising the steps of

determining whether said message calls for a recreation of re-routing plans, and

initiating a process for creating re-routing plans when said step of determining indicates it advisable.

**31.** The method of claim **30** further comprising a step of transmitting said re-routing plans, upon their completion in said process for creating, to nodes that are involved in execution of said re-routing plans.

**32.** The method of claim **31** further comprising the step of directing said nodes that are involved in execution of a particular one of said re-routing plans when said network node detects a failure that calls for said particular one of said re-routing plans to be put into effect.

**33.** The method of claim **30** further comprising a step of transmitting each of said re-routing plans, upon completion in said process for creating, to respective backup command nodes of said re-routing plans, while also keeping said re-routing plans in local storage.

**34.** The method of claim **33** further comprising a step, responsive to said network node receiving information of a particular failure, of transmitting a re-route plan responsive to said particular failure, to nodes that are involved in execution of the transmitted re-route plan.

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